

COPY**REMARKS**

Claims 2-4, 6-11, 13-31, 47, 48, and 52-56 were pending in the application. By this paper, claims 2, 3, 6-11, 13-19, 22, 23, 28, 30, 47, 48, and 53-56 have been amended, and new claims 57-87 have been added. Thus, claims 2-4, 6-11, 13-31, 47, 48, and 52-87 are now pending. Reconsideration and withdrawal of the various rejections are hereby respectfully solicited in view of the foregoing amendments and the following remarks.

Claim Rejections - 35 U.S.C. §102

Claims 3, 4, 6-8, 10, 11, 13-16, 18, 47, 48, 55, and 56 have been rejected under 35 U.S.C. §102(b) as anticipated by Wesstrom et al., U.S. Patent No. 3,388,582 (Wesstrom). In accordance with the foregoing amendments and the following remarks, the rejection under §102 should be withdrawn.

Of these rejected claims, claims 3, 7, 13-15, 47, 55, and 56 are independent. As amended, claim 3 recites a progressive die for shaping *generally planar motor lamination discs* from a strip of material. Claims 55 and 56 each similarly recite a progressive die specifically for shaping *motor lamination discs* from a strip of steel. Claim 47 also similarly recites an apparatus for shaping *a series of adjacent motor lamination discs* in a metal strip. Claim 7 recites an apparatus comprising *a strip of relatively stiff material including a series of consecutive generally planar motor lamination discs*. Claims 13 recites a process for punching *a series of shaped motor lamination discs* from an elongate strip of relatively stiff material. Claims 14 and 15 each similarly recite a process for punching *a series of shaped generally planar motor lamination discs* from a strip of either motor lamination material or motor lamination steel, respectively.

To the contrary, Wesstrom teaches only forming *brake backing plates*, not motor lamination discs. Wesstrom also teaches forming only *non-planar* or three-dimensional brake backing plates, not generally planar motor lamination discs. Wesstrom fails to teach or suggest at least the above-noted limitations of claims 3, 7, 13-15, 47, 55, and 56. For at least these reasons, Wesstrom fails to anticipate these independent claims and their corresponding dependent claims 4, 6, 8, 10, 11, 16, and 48.

These claims are also not anticipated for the following additional reasons. Wesstrom discloses a method of and apparatus for forming three-dimensional brake backing plates from heavy gage sheet metal utilizing a stamping or drawing operation. The backing plates are cut

COPY

from a continuous sheet and progressively, three-dimensionally formed or drawn *out of plane* during successive stamping operations. As material is drawn out of plane from the initial plane of the continuous sheet, each successive component or backing plate is inherently pulled further away from the adjacent components in the sheet.

Wesstrom specifically teaches, at column 2, line 55 through column 3, line 7, a pair of narrow V-shaped connecting strips 72 and 74 between adjacent sections 76 from which backing plates 78 are formed. The strips 72 and 74 retain connection between adjacent ones of the backing plates 78 while they are formed and yet permit continual, progressive separation of each backing plate 78 from adjacent backing plates 78. Wesstrom teaches only two of the V-shaped strips or portions 72 and 74 and further *only teaches continual stretching or lengthening of the strips 72 and 74* created by the progressive, inherent, and necessary separation of adjacent ones of the backing plates during stamping. Thus, Wesstrom teaches a process, a three-dimensional stamping apparatus, and a strip for forming three-dimensional brake backing plates, each being expressly and necessarily limited to continual stretching of the connecting strips 72 and 74 between plates.

Each of the rejected independent claims includes a number of limitations, other than those mentioned earlier, that are neither taught nor suggested by Wesstrom. Claim 3 has been amended to specifically recite at least *three* narrow deformable bridges that deform at additional die stations following the initial die station. The bridges deform to both *decrease the distance* between the geometric centers of the adjacent discs to shorten the longer distances and increase the distance between the geometric centers of the adjacent discs to lengthen the shorter distances to align with die station centers as the strip moves through the die stations. Claim 3 also recites distances between geometric centers of adjacent discs that vary both longer and shorter than a nominal distance. Wesstrom discloses only continued lengthening of its two V-shaped connecting strips 72 and 74, not shortening their length. Wesstrom, therefore, fails to disclose or suggest at least these additional limitations of independent claim 3. The anticipation rejection of independent claim 3 and its dependent claims 4 and 18 should be withdrawn.

Independent claim 7 recites at least *three* narrow deformable bridges connecting adjacent motor lamination discs. The bridges are recited as being sufficient to deform to both *decrease the distance* between the centers of the adjacent discs to coincide with shorter die center-to-center distances and increase the distance between the centers to coincide with longer die center-to-center distances during die formation of said discs. Again, Wesstrom

COPY

fails to disclose or suggest at least these limitations of claim 7. Thus, the anticipation rejection of claim 7 and its dependent claims 6, 8, 10, and 11 should be withdrawn.

Independent claim 13 similarly recites a process wherein at least two deformable bridges enable the distances between said adjacent discs at intermediate die stations to be both increased to match a longer distance between centers of two of said plurality of stations and decreased to match a shorter distance between centers of two of said plurality of stations by simultaneously deforming said bridges when the distances between said centers of said adjacent discs are respectively lesser than or greater than the distances between said centers of said stations. Again, Wesstrom fails to disclose or suggest at least decreasing the bridge distances recited in claim 13. Thus, the anticipation rejection of independent claim 13 and its dependent claim 16 should be withdrawn.

Independent claim 14 similarly recites a process wherein at least three narrow deformable bridges are formed connecting each pair of adjacent discs. Claim 14 further recites the step of deforming the bridges to both decrease the distance between said centers of each pair of adjacent discs when the distance between said centers is greater than the distance between said centers of two of said stations and increase the distance between said centers of each pair of adjacent discs when the distance between said centers is lesser than the distance between said centers of two of said stations. Again, Wesstrom fails to disclose or suggest at least decreasing the disc center distances recited in claim 14. The anticipation rejection of independent claim 14 should be withdrawn.

Independent claim 15 recites a process including the step of simultaneously forming at least two narrow deformable bridges connecting each pair of adjacent discs. Claim 15 also recites the step of adjusting said center-to-center distances between pairs of adjacent discs at each of said intermediate stations by deforming said bridges to decrease said center-to-center distances when said center-to-center distances are longer than said center-to-center distances of said stations and to increase said center-to-center distances when said center-to-center distances are shorter than said center-to-center distances of said stations. Again, Wesstrom fails to disclose at least to decrease the disc center distances recited in claim 15. The anticipation rejection of independent claim 15 should be withdrawn.

Independent claim 47 recites an apparatus wherein a metal strip has a series of adjacent motor lamination discs. Claim 47 further recites that geometric centers between adjacent discs are separated by center-to-center distances each of which can be longer or

COPY

shorter than other of said center-to-center distances. Claim 47 further recites the plurality of narrow bridges being sufficiently narrow to deform to both *decrease the disc distance* between adjacent discs when the disc distance is longer than one of the die distances and increase the disc distance between adjacent discs when the disc distance is shorter than one of the die distances. Again, Wesstrom fails to disclose or suggest at least decreasing the disc distance between adjacent discs recited in claim 47. The anticipation rejection of independent claim 47 and its corresponding dependent claim 48 should be withdrawn.

Independent claims 55 and 56 each similarly recite at least two bridges sufficiently narrow to deform to both lengthen and shorten, and specifically recite that *the bridges shorten said center-to-center spacing* along said longitudinal axis between said geometric centers of said adjacent discs when longer than said fixed center-to-center spacing between said die centers. Again, Wesstrom fails to teach or suggest at least this limitation of claims 55 and 56. The anticipation rejection of claims 55 and 56 should be withdrawn.

Wesstrom, whether taken alone or in combination with other prior art, also does render obvious any of the aforementioned claims for all the reasons discussed below.

Claim Rejections - 35 U.S.C. §103

Claims 2, 9, 17, 19-31 and 52-54 have been rejected under 35 U.S. C. §103(a) as obvious over Wesstrom in view of the applicants alleged admitted prior art (AAPA). The obviousness rejections should be withdrawn in view of any or all of the foregoing amendments and following remarks.

Failure to Teach or Suggest All Claim Limitations

The official action first asserts that it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the specific brake backing plate process of Wesstrom in view of the AAPA. However, the AAPA is directed to a completely different process for making metal laminations for electric motors employing various dies. The official action provides no reasoning or support found within either of these prior art teachings that would lead one to modify Wesstrom accordingly. Instead, the action only puts forth a conclusory statement that such a combination of these references would have been obvious, even though Wesstrom and the AAPA are from two entirely distinct fields of endeavor. A *prima facie* case of obviousness requires that a motivation or suggest to combine reference teachings must be found directly within the prior art, and not by

COPY

employing hindsight looking back from an applicant's invention. It appears that improper hindsight has been employed in this instance. The official action has failed to point to any such motivation or suggestion found within the prior art to combine and modify the references as proposed. The obviousness rejection must be withdrawn for at least this reason.

However, assuming for the sake of argument that such a combination were proper, the combination still fails to teach or suggest all of the claim limitations. The official action alleges that the AAPA teaches the use of pilot cutting means and pilot pin means. However, the official action correctly *does not allege* that the AAPA teaches or suggests narrow, lengthwise, bi-directionally *deformable* bridges between adjacent motor lamination discs in a strip of steel. The action does not allege that the *bridges of the AAPA both lengthen and shorten* during die progression in order to achieve proper alignment, i.e., to eliminate progression error in the die, during the die progression. The AAPA fails to disclose or suggest at least these limitations. Thus, the rejection must rely solely on Wesstrom as teaching or suggesting these limitations.

As discussed above with respect to the §102 rejections, Wesstrom, in fact, does not *teach or suggest deformable bridges for any process that both lengthen and shorten* during die progression in order to achieve proper alignment, i.e., to eliminate progression error in a die *in either longitudinal direction*. The action throughout points only to col. 2, lines 69-72 of Wesstrom as teaching or suggesting both lengthening and shortening of the strips 72 and 74. To the contrary, Wesstrom only teaches continual stretching of these strips 72 and 74.

In fact, a fair reading of Wesstrom would lead one having ordinary skill in the art away from the invention as taught by the applicant. Wesstrom teaches three-dimensional stamping or drawing operations on sheet metal to form three-dimensional brake backing plates. Successive stamping or drawing stations move material progressively further out of plane from an initial plane of the metal sheet. This successive movement of material out of plane inherently causes continued separation of the backing plates, as clearly noted at column 2, lines 63-72 in Wesstrom, thus resulting in continual stretching of the strips. The nature of the distinct brake backing plate stamping or drawing process of Wesstrom necessarily requires only stretching of the strips 72 and 74. Shortening of the strips 72 and 74 would be contrary to the express teachings of the reference.

The Wesstrom strips simply do not decrease in length at any time. It is clear from Wesstrom that this is not intended, nor would this be desirable. Controlling lengthwise

COPY

compression of thin metal strips is not nearly as predictable as continually placing tension on the strips to stretch them. Thus, decreasing the length of the strips in Wesstrom is certainly not a readily discernable characteristic.

There simply is no suggestion or motivation found within Wesstrom that its disclosed narrow strips would or could decrease in length. There is neither certainty, nor even a suggested expectation, that the Wesstrom strips 72 and 74 can or would function as necessary if they were to decrease in length at any time during the Wesstrom stamping or drawing operation. The strips 72 and 74 of the references are provided for a different purpose than the bridges as claimed. Further, the strips in Wesstrom are disclosed for use in a metal forming process unrelated to that of the present invention; one which requires continual stretching of the connecting strips 72 and 74. Not only does the reference fail to disclose or suggest deformable bridges as claimed, Wesstrom would actually teach away from the applicant's claimed invention.

As a result, a combination of Wesstrom and the AAPA, even if proper, fails to teach or suggest narrow, lengthwise, bi-directionally deformable bridges between adjacent, generally planar motor lamination discs in a strip of steel. The combination fails to teach or suggest at least that the bridges *both lengthen and shorten* as the strip progresses through the die to correct for progression error.

Independent claim 17 and corresponding dependent claims 30 and 31 each specifically recite a progressive die and a strip of motor lamination material, the strip having a series of sections connected by at least three deformable bridges. These claims also recite that the bridges are deformable both *to shorten in order to decrease the strip distance between strip pilots* of adjacent sections when longer than the die distances, and to lengthen to increase the strip distance between the strip pilots of the adjacent sections when shorter than said die distances. The bridges are recited as lengthening or shortening in order to compensate for the longer or shorter strip distances between said strip pilots. There is simply no teaching or suggestion within either the AAPA or Wesstrom of at least three deformable bridges that can shorten to decrease the strip distance between strip pilots of adjacent sections of the strip to compensate for shorter distances between die pilots.

The cited combination fails to teach or suggest all of the claim limitations. For the foregoing reasons, the rejection of claims 17, 30, and 31 should be withdrawn.

COPY

Independent claim 22 and corresponding dependent claim 23, each recite at least two deformable bridges sized to both lengthen when the strip distance is shorter than the die distances between the die pilots, *and shorten when the strip distance is longer than said die distances*. The bridges lengthen and shorten to adjust the strip distances of the adjacent sections and the distances between the strip pilot holes in order *to compensate for both the longer and shorter distances between the strip pilot holes*. Again, a combination of Wesstrom and the AAPA teaches only lengthening or stretching connecting strips between adjacent components. The combination of Wesstrom and the AAPA fails to disclose or suggest all of the limitations of independent claim 22 and dependent claim 23. The rejection of these claims should be withdrawn.

Each of claims 2, 9, 19-21, 24-29, and 52-54 depends from one of independent claims 3, 7, or 13 and includes all of the limitations of their respective base claim. For essentially the same reasons pertaining to claims 17 and 22, Wesstrom fails to disclose or suggest all of the limitations of independent claims 3, 7, and 13. The AAPA fails to provide the necessary teaching or suggestion missing from Wesstrom. As a result, the combination of Wesstrom and the AAPA fails to teach or suggest all of the limitations of dependent claims 2, 9, 19-21, 24-29, and 52-54. These claims are not rendered obvious by a combination of Wesstrom and the AAPA.

A *prima facie* case of obviousness has not been, and cannot be, established for at least these reasons. All claim limitations are simply not taught or suggested within the references teachings. The obviousness rejection of claims 2, 9, 19-31, and 52-54 must be withdrawn.

Evidence of Secondary Considerations

The applicant has also provided evidence of secondary considerations of non-obviousness of the claimed invention. The invention is novel and non-obvious over any known prior art, including both Wesstrom and the AAPA. To further illustrate that the claimed invention is non-obviousness, three separate affidavit's of the inventor, David L. Fosnaugh, are submitted with this paper in accordance with 37 C.F.R. §1.132. Each affidavit provides separate evidence of secondary considerations in support of non-obviousness.

One affidavit provides evidence that others have copied the applicant's invention, and did so immediately upon learning of the scroll relief invention. L.H. Carbide, General Electric, and Emerson each became aware of and employed the applicant's invention immediately upon learning of the claimed scroll relief solution to the progression error

COPY

problems. Such evidence that others have copied the claimed invention must be considered and given weight in determining whether the applicant's invention is obvious in view of Wesstrom, either taken alone or in combination with the AAPA.

Another of the affidavits provides evidence that unexpected results were achieved by implementation of the applicant's invention. When employed in the process of fabricating generally planar motor lamination discs, the applicant's scroll relief invention achieved a number of unexpected results. First, the progressive dies rarely, if ever, are shut down as a result progression error, which has been virtually eliminated. These results are better than anticipated. Progressive die efficiency substantially increased from only about 50 to 60% to more than 95% capacity, also far better than anticipated. Rotor and stator disc quality, including both disc flatness and concentricity or run out, improved by about 80%. Such drastic improvement in disc quality was a significant unexpected result of implementing the present invention. The 15% reduction in scrap, expected as a result of using the zigzag or scroll slit configuration, was fully realized only upon implementation of the present invention. Such evidence of unexpected results directly resulting from employing the claimed invention must be considered and given weight in determining whether the applicant's invention is obvious in view of Wesstrom, either taken alone or in combination with the AAPA.

Yet another affidavit provides evidence that there was a long felt, unsolved need within the industry of producing motor lamination disks for electric motors. Franklin Electric had been living with the problems arising from progression error since beginning production of generally planar motor lamination discs in the 1970's until implementing the applicant's invention about fifteen years later. Franklin Electric's competitors experienced these same problems for more than two decades: excessive progressive die downtime, excessive material scrap, expensive product reworking after formation, and general low quality components. These problems persisted in the industry only until the applicant's invention. These problems were solved as soon as the claimed scroll relief invention was employed by Franklin Electric and others. Competitors were quick to copy and implement the invention, providing strong evidence that they were indeed searching for and hoping for a solution to their similar problems. Such evidence of long felt need must be considered and given weight in determining whether the applicant's invention is obvious in view of Wesstrom, either taken alone or in combination with the AAPA.

COPY

Each of these affidavits, taken alone, provides strong evidence of secondary considerations of non-obviousness of the applicant's invention. In combination, the affidavit evidence is overwhelming. The invention recited in the pending claims is not rendered obvious by the teachings of Wesstrom, whether taken alone or in combination with the AAPA.

Wesstrom is From a Distinct Field of Endeavor

As noted above, Wesstrom is from a completely different field of endeavor than the invention as claimed. Wesstrom, as stated above, is directed to three-dimensional drawing or stamping of steel brake backing plates that have three-dimensional depth. Progressive formation of such three-dimensional components inherently results in continual separation between the adjacent and connected components. The problem addressed in Wesstrom is to keep the continually separating components connected, which necessitates ever-lengthening of the connecting strips 72 and 74.

The process, problem, and solution addressed in Wesstrom are unrelated to those of the present invention. One having ordinary skill in the art of forming motor lamination discs, which are generally planar in configuration, from a strip of material, would not look to the art of three-dimensional drawing and stamping such as that disclosed in Wesstrom for solutions to problems with motor lamination disc formation. The discs in a motor lamination fabrication process according to the invention do not continually separate during the process, but instead generally retain their same spacing. It is a combination of this same spacing and the variations in center-to-center distance between discs in the scroll formation that created the progression error problem. In turn, it is this very specific progression error problem that was addressed by the applicant's scroll relief invention. Wesstrom is from a different field of endeavor than motor lamination disc fabrication.

Additionally, Wesstrom issued June 18, 1968, over two decades prior to the applicant's invention. The zigzag scroll configuration and its inherent problem of progression error had also been around since about that time. At no time prior had anyone incorporated the Wesstrom connecting strips to solve the progression error problems when using a zigzag scroll configuration to form motor lamination rotors and stators. Wesstrom simply is not analogous to the present invention, and therefore, should be disqualified as prior art under 35 U.S.C. §103.

COPY**New Claims 57-87**

New claims 57-87 have been added herein for consideration. New claims 57, 58, and 76 depend from independent claim 3 and should be allowable as being dependent from an allowable base claim in accordance with the remarks set forth above. Similarly, new claims 64 and 74 depend from independent claim 14, claims 65 and 75 depend from independent claim 15, and claim 66 depends from independent claim 17. Each of these new claims should be allowable as being dependent from an allowable base claim in accordance with the remarks presented above.

New independent claim 59 and corresponding dependent claims 60-63 each recite a process for forming a series of generally planar, shaped, motor lamination discs. The recited process includes the step of adjusting the center distance between each pair of adjacent discs by both decreasing said center distances and increasing the center distances in order to align the centers of the discs with centers of the stations during the step of moving. This is recited in order to compensate for respective longer or shorter center distances between disc centers in relation to the centers of the stations.

New independent claim 67 and corresponding dependent claims 68, 69, and 77 each recite a combination progressive motor lamination die and strip of motor lamination material. The recited combination includes a slot cutting station arranged to initially form the bridges separated from one another by one or more simultaneously formed laterally extending slots. The recited deformable bridges are configured and arranged at least to decrease the strip distances between geometric centers of the discs and between corresponding pilot features of adjacent pairs of the discs.

New independent claim 70 and corresponding dependent claims 71-73 each recite an apparatus for shaping a series of motor lamination discs interconnected in a metal strip including an initial die station and straddle pilots at the initial die station. These claims also specifically recite that the initial die station simultaneously forms a plurality of narrow bridges connecting adjacent discs. The bridges are sufficiently narrow to be deformable both to decrease the strip center-to-center distances between geometric centers of adjacent discs and to increase the center-to-center distances between geometric centers of the adjacent discs, when the center-to-center distances are longer or shorter, respectively, than die center-to-center distances of adjacent die stations.

COPY

New claim 78 and corresponding dependent claim 79 each recite a progressive die for shaping a consecutive series of adjacent generally planar motor lamination discs from a strip of relatively stiff material. These claims further specifically recite forming at least two narrow deformable bridges connecting adjacent discs that enable deformation of the bridges at additional die stations following an initial die station to at least decrease the distance between geometric centers of adjacent discs when the distance is longer than a consistent distance between adjacent ones of the die stations.

New independent claim 80 and corresponding dependent claim 81 each recite an apparatus comprising a strip of relatively stiff generally planar material that includes a series of consecutive motor lamination discs. These claims further specifically recite at least two narrow deformable bridges connecting adjacent discs wherein the bridges are sufficient to enable deformation to at least decrease the distance between centers of adjacent discs when the distance between the centers is longer than a desired distance.

New independent claim 82 and corresponding dependent claim 83 recite a process for punching a series of shaped motor lamination discs from an elongate strip of relatively stiff material to form adjacent discs. These claims also specifically recite forming at least two narrow deformable bridges connecting adjacent discs and enabling the distances between adjacent discs at intermediate stations of a die to at least be decreased by simultaneously deforming the bridges when the distances between the centers of the adjacent discs is greater than the distances between the centers of the dies.

New independent claim 84 and corresponding dependent claim 85 each recite a progressive die and strip of motor lamination material. These claims also specifically recite that the strip of material includes a series of sections having strip pilots for mating with die pilots of the die stations and that the distances between strip pilots at times is variable, at times being longer than and at times being shorter than distances between the die pilots. These claims further recite at least three deformable bridges connecting adjacent sections of the strip and that the bridges are deformable to at least shorten to decrease the distance between the geometric centers and the strip pilots of the adjacent sections to compensate for longer distances between the strip pilots in comparison to the distances between die pilots of adjacent stations.

New independent claim 86 discloses a process for punching a series of shaped motor lamination rotors and stators from an elongate strip of relatively stiff material to form

COPY

adjacent discs. This claim recites the steps of forming at least two narrow deformable bridges connecting adjacent discs, enabling the distances between adjacent discs at intermediate stations to be both increased and decreased by simultaneously deforming the bridges when the distances between centers of adjacent discs are respectively lesser than or greater than the distances between centers of the stations, and cutting and shaping each of the discs to form one rotor and one stator.

New claim 87 recites a process for forming a series of generally planar, shaped, motor lamination rotors and stators. Claim 87 recites the steps of adjusting the center distance between pairs of adjacent discs between each of the die stations by both decreasing the center distances and increasing the center distances when the center distances are longer than or shorter than, respectively, distances between centers of the die stations, and separating each of the adjacent discs into an inner rotor and an outer stator.

Each of the new claims 57-87 is believed to be in condition for allowance in view of the cited art. Allowance of new claims 57-87 is respectively solicited.

CONCLUSION

Claims 2-4, 6-11, 13-31, 47, 48, and 52-87 are in condition for allowance in view of the foregoing amendments and the remarks. Reconsideration and withdrawal of the various rejections are hereby respectfully solicited.

The examiner is invited to contact the undersigned at the telephone number listed below in order to discuss any remaining issues or matters of form that will place this case in condition for allowance.

COPY

A petition for a three-month extension of time and the appropriate fee accompany this paper. A fee for 20 total claims and 9 independent claims, not previously paid for, also accompanies this paper. The Commissioner is hereby authorized to charge any fee deficiency, or to credit any overpayments, to Deposit Account No. 13-2855 of the undersigned's firm.

Respectfully submitted,



Bryan J. Lempia
Reg. No. 39,746
MARSHALL, GERSTEIN & BORUN LLP
233 S. Wacker Dr.
6300 Sears Tower
Chicago, Illinois 60606
(312) 474-6300

October 7, 2004